SEQUENCE LISTING

<110> Dominowski, Paul J.
       Frantz, Joseph C.
       Krebs, Richard L.
       Shields, Shelly L.
       Sorensen, Robert G.

<120> CANINE VACCINES AGAINST BORDETELLA BRONCHISEPTICA

<130> 16112 (PC25496A)

<140> 60/443,418
<141> 2003-01-29

<160> 3

<170> PatentIn version 3.2

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<212> PRT
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Ile His Ile Lys Gln Ser Asp Gly Ala Gly Val Arg Thr Ala Thr Gly
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Thr Thr Ile Lys Val Ser Gly Arg Gln Ala Gln Gly Val Leu Leu Glu
        35   40   45

Asn Pro Ala Ala Glu Leu Arg Phe Gln Asn Gly Ser Val Thr Ser Ser
    50   55   60

Gly Gln Leu Phe Asp Glu Gly Val Arg Arg Phe Leu Gly Thr Val Thr
65   70   75   80

Val Lys Ala Gly Lys Leu Val Ala Asp His Ala Thr Leu Ala Asn Val
                85   90   95

Ser Asp Thr Arg Asp Asp Asp Gly Ile Ala Leu Tyr Val Ala Gly Glu
            100   105   110

Gln Ala Gln Ala Ser Ile Ala Asp Ser Thr Leu Gln Gly Ala Gly Gly
            115   120   125

Val Arg Val Glu Arg Gly Ala Asn Val Thr Val Gln Arg Ser Thr Ile

Val Asp Gly Gly Leu His Ile Gly Thr Leu Gln Pro Leu Gln Pro Glu
145   150   155   160

Asp Leu Pro Pro Ser Arg Val Val Leu Gly Asp Thr Ser Val Thr Ala
                    165   170   175

Val Pro Ala Ser Gly Ala Pro Ala Ala Val Ser Val Phe Gly Ala Asn
                    180   185   190

Glu Leu Thr Val Asp Gly Gly His Ile Thr Gly Gly Arg Ala Ala Gly
                    195   200   205

Val Ala Ala Met Asp Gly Ala Ile Val His Leu Gln Arg Ala Thr Ile
        210   215   220

Arg Arg Gly Asp Ala Pro Ala Gly Gly Ala Val Pro Gly Gly Ala Val
225   230   235   240

Pro Gly Gly Phe Gly Pro Leu Leu Asp Gly Trp Tyr Gly Val Asp Val
                    245   250   255

Ser Asp Ser Thr Val Asp Leu Ala Gln Ser Ile Val Glu Ala Pro Gln
                    260   265   270

Leu Gly Ala Ala Ile Arg Ala Gly Arg Gly Ala Arg Val Thr Val Ser
                    275   280   285

Gly Gly Ser Leu Ser Ala Pro His Gly Asn Val Ile Glu Thr Gly Gly
        290   295   300

Gly Ala Arg Arg Phe Pro Pro Ala Ser Pro Leu Ser Ile Thr Leu
305   310   315   320

Arg Ala Gly Ala Arg Ala Gln Gly Arg Ala Leu Leu Tyr Arg Val Leu
                    325   330   335

Pro Glu Pro Val Lys Leu Thr Leu Ala Gly Gly Ala Gln Gly Gln Gly
                    340   345   350

Asp Ile Val Ala Thr Glu Leu Pro Pro Ile Pro Gly Ala Ser Ser Gly
                    355   360   365

Pro Leu Asp Val Ala Leu Ala Ser Gln Ala Arg Trp Thr Gly Ala Thr
    370   375   380

Arg Ala Val Asp Ser Leu Ser Ile Asp Asn Ala Thr Trp Val Met Thr
385   390   395   400

Asp Asn Ser Asn Val Gly Ala Leu Arg Leu Ala Ser Asp Gly Ser Val
            405   410   415

Asp Phe Gln Gln Pro Ala Glu Ala Gly Arg Phe Lys Val Leu Met Val
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Asp Thr Leu Ala Gly Ser Gly Leu Phe Arg Met Asn Val Phe Ala Asp
        435   440   445

Leu Gly Leu Ser Asp Lys Leu Val Val Met Arg Asp Ala Ser Gly Gln
    450   455   460

His Arg Leu Trp Val Arg Asn Ser Gly Ser Glu Pro Ala Ser Ala Asn
465   470   475   480

Thr Met Leu Leu Val Gln Thr Pro Arg Gly Ser Ala Ala Thr Phe Thr
            485   490   495

Leu Ala Asn Lys Asp Gly Lys Val Asp Ile Gly Thr Tyr Arg Tyr Arg
            500   505   510

Leu Ala Ala Asn Gly Asn Gly Gln Trp Ser Leu Val Gly Ala Lys Ala
        515   520   525

Pro Pro Ala Pro Lys Pro Ala Pro Gln Pro Gly Pro Gln Pro Gly Pro
    530   535   540

Gln Pro Gly Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro
545   550   555   560

Gln Arg Gln Pro Glu Ala Pro Ala Pro Gln Pro Pro Ala Gly Arg Glu
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Leu Ser Ala Ala Ala Asn Ala Ala Val Asn Thr Gly Gly Val Gly Leu
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Ala Ser Thr Leu Trp Tyr Ala Glu Ser Asn
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<213> Bordetella bronchiseptica

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Ile His Ile Lys Gln Ser Asp Gly Ala Gly Val Arg Thr Ala Thr Gly
            20                  25                  30


Thr Thr Ile Lys Val Ser Gly Arg Gln Ala Gln Gly Val Leu Leu Glu
            35                  40                  45


Asn Pro Ala Ala Glu Leu Arg Phe Gln Asn Gly Ser Val Thr Ser Ser
    50                  55                  60


Gly Gln Leu Phe Asp Glu Gly Val Arg Arg Phe Leu Gly Thr Val Thr
65                  70                  75                  80


Val Lys Ala Gly Lys Leu Val Ala Asp His Ala Thr Leu Ala Asn Val
                85                  90                  95


Ser Asp Thr Arg Asp Asp Asp Gly Ile Ala Leu Tyr Val Ala Gly Glu
            100                 105                 110


Gln Ala Gln Ala Ser Ile Ala Asp Ser Thr Leu Gln Gly Ala Gly Gly
        115                 120                 125


Val Arg Val Glu Arg Gly Ala Asn Val Thr Val Gln Arg Ser Thr Ile
    130                 135                 140


Val Asp Gly Gly Leu His Ile Gly Thr Leu Gln Pro Leu Gln Pro Glu
145                 150                 155                 160


Asp Leu Pro Pro Ser Arg Val Val Leu Gly Asp Thr Ser Val Thr Ala
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Val Pro Ala Ser Gly Ala Pro Ala Ala Val Ser Val Phe Gly Ala Asn
            180   185   190

Glu Leu Thr Val Asp Gly Gly His Ile Thr Gly Gly Arg Ala Ala Gly
            195   200   205

Val Ala Ala Met Asp Gly Ala Ile Val His Leu Gln Arg Ala Thr Ile
    210   215   220

Arg Arg Gly Asp Ala Pro Ala Gly Gly Ala Val Pro Gly Gly Ala Val
225   230   235   240

Pro Gly Gly Phe Gly Pro Leu Leu Asp Gly Trp Tyr Gly Val Asp Val
            245   250   255

Ser Asp Ser Thr Val Asp Leu Ala Gln Ser Ile Val Glu Ala Pro Gln
            260   265   270

Leu Gly Ala Ala Ile Arg Ala Gly Arg Gly Ala Arg Val Thr Val Ser
            275   280   285

Gly Gly Ser Leu Ser Ala Pro His Gly Asn Val Ile Glu Thr Gly Gly
    290   295   300

Gly Ala Arg Arg Phe Pro Pro Ala Ser Pro Leu Ser Ile Thr Leu
305   310   315   320

Gln Ala Gly Ala Arg Ala Gln Gly Arg Ala Leu Leu Tyr Arg Val Leu
            325   330   335

Pro Glu Pro Val Lys Leu Thr Leu Ala Gly Gly Ala Gln Gly Gln Gly
            340   345   350

Asp Ile Val Ala Thr Glu Leu Pro Pro Ile Pro Gly Ala Ser Ser Gly
            355   360   365

Pro Leu Asp Val Ala Leu Ala Ser Gln Ala Arg Trp Thr Gly Ala Thr
    370   375   380

Arg Ala Val Asp Ser Leu Ser Ile Asp Asn Ala Thr Trp Val Met Thr
385   390   395   400

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Asp Asn Ser Asn Val Gly Ala Leu Arg Leu Ala Ser Asp Gly Ser Val
            405         410             415

Asp Phe Gln Gln Pro Ala Glu Ala Gly Arg Phe Lys Cys Leu Met Val
            420             425             430

Asp Thr Leu Ala Gly Ser Gly Leu Phe Arg Met Asn Val Ala Phe Ala
        435             440             445

Asp Leu Gly Leu Ser Asp Lys Leu Val Val Met Arg Asp Ala Ser Gly
    450             455             460

Gln His Arg Leu Leu Val Arg Asn Ser Gly Ser Glu Pro Ala Ser Gly
465             470             475             480

Asn Thr Met Leu Leu Val Gln Thr Pro Arg Gly Ser Ala Ala Thr Phe
            485             490             495

Thr Leu Ala Asn Lys Asp Gly Lys Val Asp Ile Gly Thr Tyr Arg Tyr
            500             505             510

Arg Leu Ala Ala Asn Gly Asn Gly Gln Trp Ser Leu Val Gly Ala Lys
        515             520             525

Ala Pro Pro Ala Pro Lys Pro Ala Pro Gln Pro Gly Pro Gln Pro Gly
    530             535             540

Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro Gln Arg Gln
545             550             555             560

Pro Glu Ala Pro Ala Pro Gln Pro Pro Ala Gly Arg Glu Leu Ser Ala
            565             570             575

Ala Ala Asn Ala Ala Val Asn Thr Gly Gly Val Gly Leu Ala Ser Thr
            580             585             590

Leu Trp Tyr Ala Glu Ser Asn
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